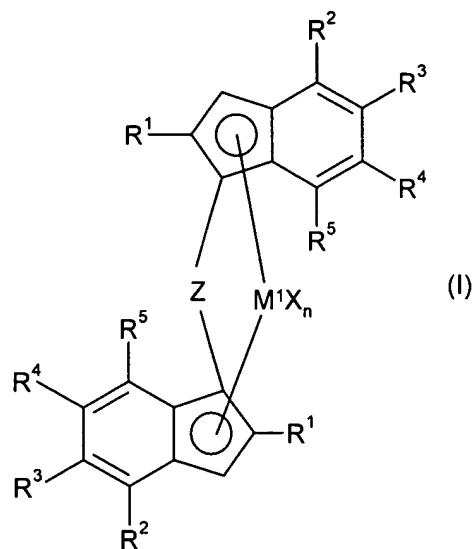


### AMENDMENTS TO THE CLAIMS

1. (Currently amended) An organometallic transition metal compound of the formula (I)



where

$M^1$  is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

$X$  are identical or different and are each halogen, hydrogen,  $C_1-C_{20}$ -alkyl,  $C_2-C_{20}$ -alkenyl,  $C_6-C_{22}$ -aryl, alkylaryl or arylalkyl each having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,  $-OR^6$  or  $-NR^6R^7$ , where two radicals  $X$  may also be joined to one another,

$n$  is a natural number from 1 to 4 which corresponds to the oxidation number of  $M^1$  minus 2,

$R^1$  is hydrogen or a  $C_4-C_{40}$  radical, a cyclic, branched or unbranched  $C_1-C_{20}$ -alkyl radical, a  $C_2-C_{20}$ -alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part or a  $C_4-C_{24}$  heteroaromatic radical selected from the group consisting of substituted or unsubstituted thienyl radicals

or of substituted or unsubstituted furyl radicals,

R<sup>2</sup> is a substituted or unsubstituted C<sub>6</sub>-C<sub>40</sub>-aryl radical or C<sub>2</sub>-C<sub>40</sub>-heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S and P,

R<sup>3</sup> is hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical, or a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,  
or the radicals R<sup>2</sup> and R<sup>3</sup> together form a ring system,

R<sup>4</sup> is hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical, or a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, a C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,

R<sup>5</sup> is a C<sub>1</sub>-C<sub>40</sub> radical, is a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, a C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,

and

Z is a divalent group CR<sup>8</sup>R<sup>9</sup>-CR<sup>10</sup>R<sup>11</sup>, where R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are identical or different and are each hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical, a trimethylsilyl group, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, a C<sub>1</sub>-C<sub>10</sub>-fluoroalkyl group, a C<sub>6</sub>-C<sub>10</sub>-fluoroaryl group, a C<sub>6</sub>-C<sub>10</sub>-aryl group, a C<sub>8</sub>-C<sub>40</sub>-arylalkenyl group, a C<sub>7</sub>-C<sub>40</sub>-arylalkyl group or a C<sub>7</sub>-C<sub>40</sub>-alkylaryl group or two adjacent radicals together with the atoms connecting them may form a saturated or unsaturated ring having from 4 to 15 carbon atoms.

2. (Original) An organometallic transition metal compound of the formula (I) as claimed in claim 1,

where

M<sup>1</sup> is an element of group 4 of the Periodic Table of the Elements,

n is 2,

R<sup>1</sup> is C<sub>1</sub>-C<sub>10</sub>-alkyl,

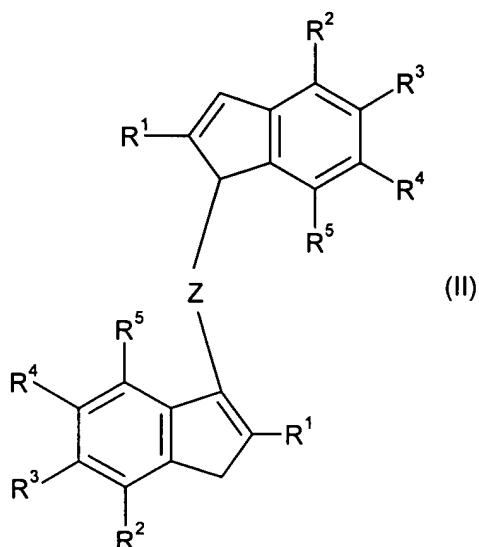
R<sup>3</sup> is hydrogen or a C<sub>1</sub>-C<sub>10</sub>-alkyl radical,

$R^4$  is hydrogen or a  $C_1$ - $C_{10}$ -alkyl radical,

$R^5$  is a  $C_1$ - $C_{10}$ -alkyl radical and

$Z$  is  $CH_2$ - $CH_2$ .

3. (Currently amended) A biscyclopentadienyl ligand system of the formula (II)



or its double bond isomers,

where the variables  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  and  $Z$  are as defined in formula (I)

$R^1$  is hydrogen or a  $C_1$ - $C_{40}$  radical,

$R^2$  is a substituted or unsubstituted  $C_6$ - $C_{40}$ -aryl radical or  $C_2$ - $C_{40}$ -heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S and P,

R<sup>3</sup> is hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical, or the radicals R<sup>2</sup> and R<sup>3</sup> together form a ring system,

R<sup>4</sup> is hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical,

R<sup>5</sup> is a C<sub>1</sub>-C<sub>40</sub> radical, and

Z is a divalent group CR<sup>8</sup>R<sup>9</sup>-CR<sup>10</sup>R<sup>11</sup>, where R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are identical or different and are each hydrogen or a C<sub>1</sub>-C<sub>40</sub> radical or two adjacent radicals together with the atoms connecting them may form a saturated or unsaturated ring having from 4 to 15 carbon atoms.

4. (Original) A biscyclopentadienyl ligand system of the formula (II) as claimed in claim 3, where

R<sup>1</sup> is C<sub>1</sub>-C<sub>10</sub>-alkyl,

R<sup>3</sup> is hydrogen or a C<sub>1</sub>-C<sub>10</sub>-alkyl radical,

R<sup>4</sup> is hydrogen or a C<sub>1</sub>-C<sub>10</sub>-alkyl radical,

R<sup>5</sup> is a C<sub>1</sub>-C<sub>10</sub>-alkyl radical and

Z is CH<sub>2</sub>-CH<sub>2</sub>.

5. (Currently amended) A catalyst system for the polymerization of olefins comprising at least one organometallic transition metal compound as claimed in claim 1 ~~claim 1 or 2~~ and at least one cocatalyst as cation-forming compound.

6. (Original) A catalyst system as claimed in claim 5 which further comprises a support.

7. (Currently amended) A process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of a catalyst system as claimed in claim 5 ~~claim 5 or 6~~.

8. cancelled

9. (Currently amended) A process for preparing an organometallic transition metal compound, which comprises reacting a biscyclopentadienyl ligand system as claimed in claim 3 ~~claim 3 or 4~~ or a bisanion prepared therefrom with a transition metal compound.

10. (New) A biscyclopentadienyl ligand system as claimed in claim 3, wherein

R<sup>1</sup> is hydrogen or a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, a C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part or a C<sub>4</sub>-C<sub>24</sub> heteroaromatic radical selected from the group consisting of substituted or unsubstituted thienyl radicals or of substituted or unsubstituted furyl radicals,

R<sup>2</sup> is a substituted or unsubstituted C<sub>6</sub>-C<sub>40</sub>-aryl radical,

R<sup>3</sup> is hydrogen or a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,

or the radicals R<sup>2</sup> and R<sup>3</sup> together form a ring system,

R<sup>4</sup> is hydrogen or a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, a C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,

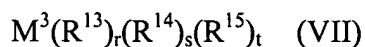
R<sup>5</sup> is a cyclic, branched or unbranched C<sub>1</sub>-C<sub>20</sub>-alkyl radical, a C<sub>2</sub>-C<sub>20</sub>-alkenyl radical, an arylalkyl radical having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part,

and

Z is a divalent group CR<sup>8</sup>R<sup>9</sup>-CR<sup>10</sup>R<sup>11</sup>, where R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are identical or different and are each hydrogen or a trimethylsilyl group, a C<sub>1</sub>-C<sub>10</sub>-alkyl group, a C<sub>1</sub>-C<sub>10</sub>-fluoroalkyl group, a C<sub>6</sub>-C<sub>10</sub>-fluoroaryl group, a C<sub>6</sub>-C<sub>10</sub>-aryl group, a C<sub>8</sub>-C<sub>40</sub>-arylalkenyl group, a C<sub>7</sub>-C<sub>40</sub>-arylalkyl group or a C<sub>7</sub>-C<sub>40</sub>-alkylaryl group or two adjacent radicals

together with the atoms connecting them form a saturated or unsaturated ring having from 4 to 15 carbon atoms.

11. (New) A catalyst system as claimed in claim 5 further comprise a metal compound of the formula (VII)



wherein

$M^3$  is an alkali metal, an alkaline earth metal or a metal of group 13 of the Periodic Table,

$R^{13}$  is hydrogen,  $C_1-C_{10}$ -alkyl,  $C_6-C_{15}$ -aryl, alkylaryl or arylalkyl each having from 1 to 10 carbon atoms in the alkyl part and from 6 to 20 carbon atoms in the aryl part,

$R^{14}$  and  $R^{15}$  are identical or different and are each hydrogen, halogen,  $C_1-C_{10}$ -alkyl,  $C_6-C_{15}$ -aryl, alkylaryl, arylalkyl or alkoxy each having from 1 to 10 carbon atoms in the alkyl radical and from 6 to 20 carbon atoms in the aryl radical,

$r$  is an integer from 1 to 3,

and

$s$  and  $t$  are integers from 0 to 2, where the sum  $r+s+t$  corresponds to the valence of  $M^3$ .

12. (New) A catalyst system as claimed in claim 11 wherein  $M^3$  is boron, aluminum, gallium, indium or thallium.